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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/786,547

02/26/2004

Takayuki Iseki

21994-00067-US

3258

30678

7590

09/30/2005

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT

PAPER NUMBER

1753

DATE MAILED: 09/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/786,547

Applicant(s)

ISEKI, TAKAYUKI

Examiner

Rodney G. McDonald

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 11, "on almost center" is unclear. Is the permanent magnet meant to rotate at the center or around the center?

Claim 1, line 25, "the permanent magnet" is confusing since the claims mentions a permanent magnet, a first permanent magnet and a second permanent magnet. It needs to be clear that the magnet arrange is cut diagonally as shown in Applicant's Fig. 2.

Claim 1, line 27, "the permanent magnet" is unclear because it is unclear to what permanent magnet the claim is referring.

Claim 1, line 28, "the axis" lacks antecedent basis.

Claim 3, line 2, "the permanent magnet" is unclear because it is unclear to what permanent magnet the claim is referring.

Claim 3, lines 16-18, the first and second permanent magnets being made to be flat horizontally and in parallel with the base is unclear since the first and second permanent magnets are cut diagonally.

Claim 4, line 2, "the permanent magnet" is unclear because it is unclear to what permanent magnet the claim is referring.

Claim 4, line 2, "into that" is unclear.

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Claim 4, lines 2 and 3, the first and second permanent magnets being made to be flat horizontally and in parallel with the base is unclear since the first and second permanent magnets are cut diagonally. Should the claim characterize this feature by indicating earlier that this feature is due to the slant of the rotation controller?

Claim 4, lines 6 and 7, is unclear because "the axis" lacks antecedent basis.

Claim 5, line 5, "the permanent magnet" is unclear because it is unclear to what permanent magnet the claim is referring.

Claim 5, lines 6 and 7, the first and second permanent magnets being made to be flat horizontally and in parallel with the base is unclear since the first and second permanent magnets are cut diagonally. Should the claim characterize this feature by indicating earlier that this feature is due to the slant of the rotation controller?

Claim 5, lines 9 and 10, "the axis" lacks antecedent basis.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grunenfelder (U.S. Pat. 5,399,253) in view of Franks (GB 2241710) and Kobayashi et al. (U.S. Pat. 5,439,574).

Regarding claim 6, Grunenfelder teach in Fig. 2 a target 1 a cathode for holding the target 1, a permanent magnet located under the target 10, 11, the permanent magnet comprising a first permanent magnet 10 provided with a sliding mechanism for sliding the first permanent magnet 10 horizontally with respect to the target, being located in the middle of the target, a second magnet 11 located and fixed in peripheral area of the target 1 and the polarity of the first magnet 10 and the second magnet 11 have opposite polarities. The top surfaces of the magnet are in parallel with one another. (See Fig. 2, 2a; Column 6 lines 18-45)

The differences between Grunenfelder et al. and the present claims is that a vacuum chamber is not discussed, a substrate is not discussed, an anode holding the substrate being located above the cathode to face the substrate toward the target on the cathode is not discussed and the field strength of the second magnet being weaker than the field strength of the first magnet is not discussed.

Kobayashi et al. teach in Fig. 1 a vacuum chamber 1, a substrate 6 and a substrate holder 4. The substrate anode includes the substrate holder and the

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substrate. The substrate is located above the cathode 2. (See Fig. 1; Column 1 lines 17-45)

The motivation for providing a vacuum chamber, a substrate, an anode located above the target holding the substrate is that it allows for producing metallization schemes on substrates. (Column 1 lines 10-15)

Franks teach an unbalanced magnetron where the total strength of the peripheral magnets is greater than the strength of the magnet at the center. (See Page 4; Abstract)

The motivation for utilizing an unbalanced magnetron is that it allows for sputtering ferromagnetic targets. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Grunenfelder by utilizing a vacuum chamber, substrate and anode supporting the substrate above the target as taught by Kobayashi et al. and to have utilized an unbalanced magnetron as taught by Franks because it allows for producing metallization schemes on substrates and allows for sputtering ferromagnetic targets.

Allowable Subject Matter

Claims 1-5 are would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

The following is a statement of reasons for the indication of allowable subject matter:

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Claims 1-5 are indicated as being allowable over the prior art of record because the prior art of record does not teach the claimed subject matter including a rotation controller to rotate the permanent magnet arrangement so as to pivot on almost a center of the target; where the magnetic field strength of the second permanent magnet is weaker than the magnetic field strength of the first permanent magnet and where the first and second permanent magnets of the magnet arrangement are cylindrical in shape and where the top portion of the first and second permanent magnets are cut diagonally.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tetsuji (Japan 07-166346) teach rotating the magnets and moving the magnets toward and away from the target.


Shirashi (Japan 02-277771) teach rotating a magnet having different magnet pieces located at different distances from the back of a target.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rodney G. McDonald
Primary Examiner
Art Unit 1753

RM
September 28, 2005